

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Klaus ENDRES et al.

Confirmation No.: 8426

Group Art Unit: 1796

Appl. No. : 10/587,362

Examiner: Li, Aiqun

I. A. Filed : January 28, 2005

For : CONSOLIDATION AGENTS AND THE USE THEREOF FOR
CONSOLIDATING MOLDED BODIES AND GEOLOGICAL
FORMATIONS CONSISTING OF POROUS OR PARTICULATE
MATERIALS

REPLY BRIEF UNDER 37 C.F.R. § 41.41(a)(1)

Commissioner for Patents
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Sir:

This Reply Brief is in response to the Examiner's Answer mailed January 26, 2010, the period for reply extending until March 26, 2010.

In the Examiner's Answer all grounds of rejection set forth in the final rejection are maintained.

Appellants note that the Examiner's Answer does not sufficiently address several of Appellants' arguments as to why the rejections are without merit, and misrepresents some of the facts. These deficiencies have prompted the present Reply Brief.

Appellants also note that this Reply Brief is being filed under 37 C.F.R. § 41.41(a)(1) and is directed to the arguments presented in the Examiner's Answer, and therefore must be entered unless the final rejection is withdrawn in response to the instant Reply Brief.

In order to avoid repetition, the following response to the Examiner's arguments in the Examiner's Answer will be limited to issues which are important enough to warrant a further comment in Appellants' opinion. Accordingly, Appellants' silence with respect to any allegations set forth in the Examiner's Answer which are not specifically addressed below should by no means be construed as Appellants' admission that these allegations are of any merit.

REPLY

1. What Applicants take from the comments in the Examiner's Answer is that the Examiner does not deny the fact that the binders or consolidation agents, respectively which are described in SCHMIDT et al., U.S. Patent No. 6,287,639 (hereafter "SCHMIDT I") and SCHMIDT et al., U.S. Patent No. 6,378,599 (hereafter "SCHMIDT II") contain (colloidal) particles and are, thus, not particle-free. However, it appears that the Examiner essentially takes the position that the binders of SCHMIDT I and SCHMIDT II consist of two separate components, i.e., (a) colloidal particles and (b) hydrolysates and condensates of silanes of general formula (I) as depicted in, e.g., the abstracts of SCHMIDT I and SCHMIDT II and that exclusively component (b) of these binders, i.e., hydrolysates and condensates of silanes of general formula (I), is responsible for the binding and consolidating action thereof. The Examiner thus appears to be of the opinion that the actual binders or consolidation agents according to SCHMIDT I and SCHMIDT II are the hydrolysates and condensates of silanes of general

formula (I) (i.e., without the colloidal inorganic particles also comprised therein), wherefore the actual binders or consolidation agents according to SCHMIDT I and SCHMIDT II are particle-free, as recited in instant independent claim 11.

Appellants strongly disagree with the Examiner in this regard. In particular, even if the Examiner were correct in assuming that the colloidal inorganic particles which are present in the binders of SCHMIDT I and SCHMIDT II do not make any contribution to the binding or consolidating action of these binders it cannot reasonably be disputed that these binders do contain (colloidal) particles and can thus, not be considered to be particle-free.

It further must be taken into account here that the binders of SCHMIDT I and SCHMIDT II do not contain the colloidal particles and the hydrolysates/condensates of silanes of general formula (I) as separate entities. Rather, the colloidal particles and the hydrolysates/condensates are inseparably linked to each other by chemical bonds or, using the terminology used in SCHMIDT I and SCHMIDT II, the colloidal particles are surface-modified by the hydrolysates/condensates.

As one of ordinary skill in the art will understand this surface-modification involves a chemical reaction between a surface group of a colloidal particle (e.g., a hydroxy group) and a group of a silane of general formula (I) (or a hydrolysate/condensate derived therefrom) which is capable of reacting with the surface group of the colloidal particle to form a chemical bond between the (surface of) the colloidal particle and the silane or hydrolysate/condensate derived therefrom, respectively.

In other words, in contrast to a mere suspension of colloidal particles in a matrix of hydrolysates/condensates of silanes of general formula (I), the colloidal particles in the binders of SCHMIDT I and SCHMIDT II cannot be separated from the hydrolysates/condensates. Accordingly, even if one of ordinary skill in the art were to come to the conclusion that the colloidal particles in the binders of SCHMIDT I and SCHMIDT II do not serve any useful purpose or may even be disadvantageous, it would not be possible to remove these particles from the hydrolysates/condensates of silanes of general formula (I) of the binders of SCHMIDT I and SCHMIDT II because these particles are an integral component of these binders.

Appellants further point out that Espin et al., U.S. Patent No. 6,513,592 (hereafter “ESPIN”) even contradicts the Examiner’s apparent opinion that the colloidal particles in the binders of SCHMIDT I and SCHMIDT II play no role in the actual bonding or consolidation, respectively of a substrate. In particular, in col. 2, lines 47-63 ESPIN explains the important function of nanoparticles for the method taught therein (emphasis added):

... Following injection of the displacement fluid, a consolidation system **16** is then injected. In accordance with the present invention, the consolidation system **16** is a fluid suspension of nanoparticles, preferably an aqueous suspension of nanoparticles as will be more thoroughly discussed below.

During this injection, nanoparticles lodge between loose grains of the unconsolidated formation. Consolidation occurs over time, and can be expedited as described below, wherein the nanoparticles form a bond of sufficient strength with adjacent contacting grains of sand that the Young's Modulus of the formation is substantially increased, for example to values of greater than or equal to about 1×10^6 psi. This is a substantial improvement as compared to untreated unconsolidated formations which can frequently have a Young's Modulus of less than or equal to about 0.4×10^6 psi.

In col. 3, lines 5-19, ESPIN further states (emphasis added):

The nanoparticles of the present invention are provided having an average particle size of between about 1 nanometer (10^{-9} m) (nm) and about 200 nanometers (10^{-9} m) (nm). The nanoparticles are formed of molecules of organic and inorganic components. The inorganic component has an affinity for the sand grains of the formation. Thus, SiO₂, for example, is suitable as the inorganic compound, particularly, silica and/or quartz. The organic component allows for polymerization bonding of the inorganic component to the contacting sand grains of the formation under certain pH conditions as explained hereinbelow. Suitable organic components include, for example, silanes, hydroxyls and/or alkaloids. Suitable nanoparticle materials for use in the method of the present invention include those disclosed in PCT/EP97/06370 published May 28, 1998.

The above statements in ESPIN make it abundantly clear that both the nanoparticles and the organic component (surface modification of the nanoparticles) of the binders of SCHMIDT I and SCHMIDT II take part in the consolidating and binding action and complement each other. In other words, the (colloidal) particles in the binders of SCHMIDT I and SCHMIDT II are not only an integral component of these binders but also take part in the binding and consolidation action thereof.

Appellants submit that for at least all of the foregoing reasons, the instant rejections under 35 U.S.C. § 102(b) over SCHMIDT I and SCHMIDT II are without merit and should be reversed.

2. Appellants further point out again that SCHMIDT I fails to specifically teach a hydrolysate and/or a precondensate of a combination of silanes comprising (a1) an alkylsilane, (a2) an arylsilane and (b) an orthosilicic ester as recited in instant claim 17, let alone a hydrolysate and/or a precondensate of a combination of silanes which comprise methyltriethoxysilane, phenyltriethoxysilane and tetraethoxysilane as recited in

instant claim 18. In this regard, the rejection relies on col. 3, line 30 and Example 1 of SCHMIDT I (see page 5, first paragraph of the July 8, 2009 Final Office Action).

However, it is not seen that these passages of SCHMIDT I disclose the combinations of silanes recited in claims 17 and 18. In this regard, it is pointed out that one of the requirements for anticipation is that an anticipatory document discloses each and every element recited in a particular claim as arranged in the claim. See, e.g., NetMoneyIN, Inc. v. VeriSign, Inc., 545 F.3d 1359 (Fed. Cir. 2008), relevant portions whereof are reproduced below (bold face supplied):

The district court, after finding all five of these links in the iKP reference, albeit in two separate disclosed examples, concluded that claim 23 was anticipated under 35 U.S.C. § 102(a) and therefore invalid. Specifically, the district court concluded:

All of the limitations of claim 23 can be found within the iKP reference. A simple combination would produce the system described in claim 23 of the '737 patent. That no specific example within iKP contains all five links does not preclude a finding of anticipation.

Summary Judgment Decision at 3. NMI contends that the district court's combination of two disclosed examples in order to find all elements of the claim was erroneous. VeriSign responds that the district court did not improperly rearrange the links in the iKP reference, but rather "merely relied on various express teachings from a single document that together completely disclose the five claimed links." Appellees' Br. at 61. Under VeriSign's theory, this was sufficient to establish anticipation, because all that is required is "that the four corners of a single, prior art document describe every element of the claimed invention." *Id.* at 61-62 (quoting Xerox Corp. v. 3Com Corp., 458 F.3d 1310, 1322 (Fed. Cir. 2006)). We disagree with VeriSign, and take this opportunity to clarify what a reference must show in order to anticipate a claimed invention.

Section 102(a) provides that an issued patent is invalid if "the invention [therein] was . . . described in a printed publication . . . before the invention thereof by the applicant." Section 102 embodies the concept of novelty—if a device or process has been previously invented (and disclosed to the public), then it is not new, and therefore the claimed invention is "anticipated" by the prior invention. As we have stated numerous times (language on which VeriSign relies), in order to demonstrate anticipation, the proponent must show "that the four corners of a single, prior art document describe every element of the claimed invention." Xerox, 458 F.3d at 1322 (quoting Advanced Display Sys., Inc. v. Kent State Univ., 212 F.3d 1272, 1282 (Fed. Cir. 2000)). This statement embodies the requirement in section 102 that the anticipating invention be "described in a printed publication,"

and is, of course, unimpeachable. But it does not tell the whole story. Because the hallmark of anticipation is prior invention, **the prior art reference—in order to anticipate under 35 U.S.C. § 102—must not only disclose all elements of the claim within the four corners of the document, but must also disclose those elements “arranged as in the claim.”** Connell v. Sears, Roebuck & Co., 722 F.2d 1542, 1548 (Fed. Cir. 1983).

The meaning of the expression “arranged as in the claim” is readily understood in relation to claims drawn to things such as ingredients mixed in some claimed order. In such instances, a reference that discloses all of the claimed ingredients, but not in the order claimed, would not anticipate, because the reference would be missing any disclosure of the limitations of the claimed invention “arranged as in the claim.” But the “arranged as in the claim” requirement is not limited to such a narrow set of “order of limitations” claims. Rather, **our precedent informs that the “arranged as in the claim” requirement applies to all claims and refers to the need for an anticipatory reference to show all of the limitations of the claims arranged or combined in the same way as recited in the claims, not merely in a particular order.** The test is thus more accurately understood to mean “arranged or combined in the same way as in the claim.”

For example, in Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co., 730 F.2d 1452 (Fed. Cir. 1984), we reviewed a district court’s determination that a patent directed to a hydraulic scrap shearing machine was anticipated by a prior patent directed to a method for shearing spent nuclear fuel bundles. Because the district court had “treated the claims as mere catalogs of separate parts, in disregard of the part-to-part relationships set forth in the claims and that give the claims their meaning,” we reversed. Id. at 1459. Although the prior art reference could be said to contain all of the elements of the claimed invention, it did not anticipate under 35 U.S.C. § 102 because it “disclose[d] an entirely different device, composed of parts distinct from those of the claimed invention, and operating in a different way to process different material differently.” Id. at 1458. The reference thus was deficient because it did not disclose the elements of the claimed invention “arranged as in the claim” as required by 35 U.S.C. § 102. Id.

In Ecolochem, Inc. v. Southern California Edison Co., 227 F.3d 1361 (Fed. Cir. 2000), we reviewed a district court’s decision that a prior art reference directed to “Saving Energy by Catalytic Reduction of Oxygen in Feedwater” anticipated a claim reciting the use of hydrazine with a mixed resin bed to deoxygenate water. In finding that the reference anticipated the claim, the district court considered a figure and accompanying text, which taught the use of hydrogen with a mixed bed to deoxygenate water, in conjunction with a separate passage discussing deoxygenating water with, among other things, hydrazine. Id. at 1369. We reversed. After determining that the relevant figure and accompanying text described only the use of hydrogen to deoxygenate water, we concluded that the reference could not anticipate the claimed invention because there was no link between that figure and the general discussion of hydrazine as a deoxygenating agent. Id. In other words, we concluded that although the reference taught all elements of the claim, it did not contain a discussion suggesting or linking

hydrazine with the mixed bed in the figure, and thus did not show the invention arranged as in the claim.

In all of these cases, the prior art reference had to show the claimed invention arranged or combined in the same way as recited in the claim in order to anticipate. **We thus hold that unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.**

Here, the iKP reference discloses two separate protocols for processing an Internet credit card transaction. Neither of these protocols contains all five links arranged or combined in the same way as claimed in the '737 patent. Thus, although the iKP reference might anticipate a claim directed to either of the two protocols disclosed, it cannot anticipate the system of claim 23. The district court was wrong to conclude otherwise.

Appellants fail to see that the subject matter of instant claims 17 and 18 is disclosed in SCHMIDT I "as arranged or combined" in these claims. This is yet another reason why SCHMIDT I is unable to anticipate the subject matter of claims 17 and 18.

3. Regarding the Examiner's allegations at page 8 of the Examiner's Answer Appellants submit that the rejection of claims 28-30 under 35 U.S.C. § 103(a) as allegedly being unpatentable over ESPIN is based on the incorrect (see above) assumption that SCHMIDT I anticipates the subject matter of claims 11-27 and thus, is necessarily without merit as well.

CONCLUSION

The request to reverse the rejection of claims 11-30 and to return the application to the Examining Group for prompt allowance is respectfully maintained.

Although no fee is believed to be required for entry of this Reply Brief, the Patent and Trademark Office is hereby authorized to charge any fee that is deemed to be necessary to Deposit Account No. 19-0089.

Respectfully submitted,
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